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ABSTRACT

Some observations are presented on a social indicators approach to statewide educational assessment. The context of the observations is the Oregon Department of Education model for educational planning. Much of what is said can also be applied to educational planning and program evaluation at the federal level or in large school systems. For the purposes of this discussion, a social indicator is defined as any statistical time series on a quantitative variable that is measurable and time-referenced. One-shot measures are excluded, as are sequences of qualitative descriptions. Operating from the premise that agencies may be forced to build educational indicators from extant data collections, some of the methodological problems inherent in this approach are discussed. Some possible solutions are proposed, both short-term and long-term, for measurement issues such as specifications bias, construct validity, and political validity. Possible areas for research and experimentation leading to more ideal sets of educational indicators are described. (RC)

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An Abundance of Answers In Search of Questions: On a Methodology
of Assessment Through Indicators*

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Overview

This paper contains some observations on a social indicators approach to statewide assessment of education. The context of the observations is the Oregon Department of Education model for educational planning. A plan for a feasibility study on using indicators in assessment exists in full glory (Jaeger, 1976) and has been submitted to the Oregon Department of Education. Much of what I have to say here can be applied to educational planning and program evaluation at the federal level or in large school systems. The variables and the cast of characters would change, but the basic approach, and the fundamental problems, would not.

Statewide assessment is an activity about which it might be said that, never before has so much energy been invested by so many for so long, with so little clarity and consensus on goals and desired outcomes. If a social indicators approach to statewide assessment serves no other purpose, it may force consideration of desired outcomes and examination of the reasonableness of methods.

Although the Oregon planning model has already been reviewed in some detail in this symposium, it will be useful to list its elements once again. The initial step in the model is goal setting. Long-range, statewide goals for elementary and secondary education are established by the State Board of Education. These goals are intended to be viewed as benchmarks against which the relevance of all education activities in the state can be judged. Educational assessment is the second step in the planning model. The purpose of assessment is to provide data for determination of the state's educational status on dimensions defined by the goals established in step one. In the third step of the planning model, the results of steps one and two are compared. In the tradition of the discrepancy evaluation model, needs are defined as discrepancies between goals and current status.

Since it is assumed that needs will exceed available resources, the fourth step of the planning model consists of ranking needs in order of priority. In the fifth step of the model, specific objectives are established for needs that have been identified for allocation of current resources. In the Oregon plan, objectives are "action items"; they specify accomplishments by particular elements of the educational system, in order to meet identified needs. In step six of the planning model, alternative plans for achievement of objectives are put forth and considered. The best of the alternative plans that are judged to be feasible is selected in step seven. Resources are allocated to the activities specified by the selected plan in step eight. In step nine, activities specified in the selected plan are undertaken, and a best effort is made to implement the plan. Step ten consists of a discrepancy evaluation of the plan and its implementation, together with necessary modification of objectives, the plan, or resource allocation. The evaluation provides some of the information necessary to establish goals, and the ten-step model is repeated as often as necessary.

This idealized planning model is similar in its basic assumptions, and its linearity, to many others. Some of its language may be unique, but its "ready, set, go" approach to action is familiar. Whether it will work well, in either a normative or absolute sense, is a testable proposition. Nonetheless, it lends rationality to statewide assessment by providing some reasons for assessing educational status and progress. Before proceeding to examine these, I would like to consider the assumptions underlying the Oregon planning model, and the role of assessment in planning.

Assumptions

Beyond the initial goal-setting step, in which the mission of the educational system can be formulated in the political marketplace, the

planning system assumes that decision-making is public, rational, empirically-based, and a-political. In the absence of any of these assumptions, the planning system could not function. For example, once goals have been set by the State Board of Education, they are assumed to become the stimuli for all decisions and activities by educators at all subordinate levels of government. There can be no hidden agendas or alternative goal sets if the planning system is to proceed on course. So it must be assumed that all educators outside the State Board of Education understand the goals, accept the goals, and are willing to plan and conduct their activities in ways that will facilitate accomplishment of the goals. The system falters if any of the following assumptions are violated:

- 1) Decision-makers are rational, and work only to maximize the common good;
- 2) Decision-makers are capable of responding and willing to respond to externally-derived data;
- 3) The educational system is infinitely adaptive; in the face of conflicting information, current activities can be modified to meet current needs;
- 4) Freedom of information will be accepted by all who hold decision-making power; "government in the sunshine" will be practiced by the education bureaucracy;
- 5) Both decision-makers and the public can establish common-metric utilities on dimensions of current educational status, trends in educational status, and desired outcomes in education;
- 6) All constructs of interest and value can be measured with tolerable precision and validity;
- 7) Causal models of the relationships between resource allocation, governmental action, and educational outcomes can be established

and validated.

The Role of Assessment in Planning

If the Oregon planning system for education is to succeed, and the assumptions delineated above are to be satisfied, assessment must meet two crucial tests. First, it must provide sufficient information to determine whether, and to what degree, the State Board of Education's goals are being achieved. Without this information, the third step of the planning model, analysis of the disparity between goals and current status, cannot be completed. This function of assessment is largely descriptive, possibly feasible, and not nearly as simple as the planning model suggests. As in most states, Oregon's goals for education are quite global and general. To wit: "In preparing for the life role of individual, every student in the elementary and secondary schools shall have the opportunity to develop skills necessary for achieving fulfillment as a self-directed person, acquire the knowledge necessary for achieving and maintaining physical health, acquire knowledge necessary for achieving and maintaining mental health, develop the capacity for coping with change through an understanding of the arts, etc., etc. The list goes on at this level of generality. By my count, there are forty-three goals altogether.

If, through assessment, the state is to determine whether, for example, every student in the elementary and secondary schools has the opportunity to "develop skills necessary for achieving fulfillment as a self-directed person", common agreement must be reached on the meaning of a number of terms, and massive construct validity problems must be solved. What is a self-directed person? What behaviors, skills, capacities and actions would cause us to label an elementary or secondary student a potentially "fulfilled self-directed person"? Perhaps Ted Blau's work on life quality indicators will be helpful here. But suppose that we could agree on the definition of

a potentially fulfilled self-directed elementary school student. Our problems would not be over. For the goal states that "every student in the elementary and secondary schools shall have the opportunity to develop the skills necessary...". Now we must come to some agreement on what these skills are, how they can be measured, and, of greater importance, what elements of an educational experience provide students with the opportunity to develop such skills. Here we must move, however unwilling and unwitting, into the realm of causal modeling.

The second task for educational assessment demands causal modeling even more forcefully than does the first. Assessment must provide a basis for the setting of priorities, including allocation of resources among competing programs, projects and constituencies. To determine where scarce resources shall be allocated, decision-makers must have some basis for determining the results their allocation decisions are likely to realize; in short, they must be able to relate decisions on educational inputs to likely outcomes. Existing research on aptitude-treatment interactions suggests that causal models will be complex, that strong main-effects will be few and far between, and that low-order interactions will not be highly explanatory (Cronbach and Snow, 1976). The recent resurgence of interest in the Carroll model of 1963, and the emergence of the Wiley-Harnishfeger and Harnishfeger-Wiley models of 1975 and 1976, suggest that we're far from settled on what input factors affect educational outcomes. All this is not to say categorically that rational, linear, data-based educational planning models won't work; just to confirm, once again, that it isn't as simple as we might hope.

Can an Indicators Approach to Assessment Help?

There are at least as many definitions of the term "social indicator" as

there are contributors to the burgeoning literature in the field. The social indicators movement can claim literally thousands of papers in professional journals, dozens of books, and its own three-year-old journal, Social Indicators Research. For purposes of this discussion, an indicator, whether social or educational, will be defined as any statistical time series on a quantitative variable that is measurable and time-referenced. One-shot measures are excluded, as are sequences of qualitative descriptions.

In my view, the serious assessment problems I've described will not be readily solved through appeal to the literature on social indicators -- or through an "indicators approach" to statewide assessment. I don't claim to have studied the entire social indicators literature, but I have spent about a month with it. It provides no general and unique methodology. Its principal contributors seem almost oblivious to problems of psychometric adequacy, although Land (1975) and DeNeufville (1975) consider construct validity problems briefly. The principal advantages of approaching educational assessment from the perspective of indicators are these: First, attention would be paid to trends in educational variables, in contrast to one-shot status measurement. The National Assessment philosophy advocates this approach, so the idea is not new to education. But good ideas are worthy of reiteration. Despite current resurgence of the popularity of criterion-referenced measurement, I think that most of our value judgments are inherently norm-referenced. Wilt Chamberlain is judged to be tall not only because he's somewhere around seven feet, but because that height is at least three standard deviations above the worldwide mean for adult males. If I tell you that the Dow Jones average for 30 industrials closed at 1000 today, those who follow the stock market would respond positively, not because the scale has any criterion-referenced meaning, or practical interpretation, but because that index was at 930 just a month ago. Time series provide inherent, temporal norms, and

are therefore amenable to valuing.

An Indicators approach to statewide assessment is also likely to bring about a vastly broadened range of variables to be considered. It has the likelihood of fostering movement from a concentration on direct or proximal measurement of the supposed "effects" of educational intervention, to the measurement of distal variables that are a) farther along a causal chain extending from inputs and interventions to outputs, and b) closer to ultimate criterion variables. Spady (1977) called the latter variables "competencies" and the former "capacities", in a recent article on competency-based education. An example of a capacity would be ability to solve problems that required basic arithmetic operations; a competency is illustrated by ability to participate in a municipal election.

Use of indicators in statewide assessment may force educators and the public to define what they mean by competencies. Thus expectations placed on the schools by the public may become clarified. This will surely be necessary if indicators of progress toward educational goals are to be defined, presented to the public, and accepted as measures of educational effectiveness.

As in many states, the demands on a statewide assessment system in Oregon far exceeded the resources that were available to that system. Mary Hall developed an interesting approach to solving that problem. She suggested that assessment of progress toward many of Oregon's educational goals might be achieved through analysis of existing data available both within and outside the state's Department of Education. For example, the branch of state government concerned with criminal justice might provide time series that could be used to assess the effectiveness of the state's citizenship education program. The plan for exploring the feasibility of an indicators approach to statewide assessment, mentioned earlier, was based on Mary's idea. It is an elaborate plan, since the problem is a difficult one. And its thirty-

four steps cannot be dealt with in a ten-minute paper that has already run overtime. But the title is "Exploring the feasibility of using existing data as indicators of progress in statewide assessment", and it's available from the Oregon Department of Education at cost of reproduction. If the idea interests you, I commend the plan to your attention.

What I've said here may sound highly critical of Oregon's planning and assessment system. That view requires perspective. First, I don't have a better approach to offer. Second, in comparison to the activities of other states, the Oregon system fares well indeed. It involves all levels of the education system, including classroom teachers and the public. It defines the purposes of education far more broadly than minimal competencies in basic skills. It is adaptive, rational and open. But it will be far more difficult to carry out than the State Board of Education or others in the state government seem to realize. And an indicators approach to assessment won't solve its most serious problems.

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